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ABSTRACT

The European Social Fund's (ESF's) emphasis on new technology training increased throughout the 1980s, but in the 1990s this emphasis disappears from policies toward "socially excluded" groups, including long-term unemployed women. Women are segregated into certain occupations and then further segregated by a hierarchical division that consistently favors men and is reflected in the gendered pay differentials. Furthermore, women are far less likely than men to be employed full time, but are more likely to be in temporary or part-time employment: lower paid and less secure. The importance of this gendered hierarchical and occupational segregation is that women have been restricted to the "low-skilled," low-paid, periphery occupations, with little authority or control. Linked to this concept of gendering is that of re-gendering. This continual process of gendering is related directly to changes within the processes of production and maintains the gendered power differential. New technology is also being "gendered." A research project that followed the general principles of "grounded theory" has shown that new technology training is no longer stressed in the European Union (EU) Priority Guidelines. This change has occurred at the same time as numerous EU Reports have consistently stressed the importance of new technology, especially for vulnerable groups, including women. The targeted working-class women are having the occupational key to the future effectively denied them. (Contains 60 references.) (YLB)

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The ESF and new technology training for unemployed women.

Abstract.

This paper focuses on the European Social Fund's prioritization of new technology training for unemployed women, from its high priority in the early 1980s to its disappearance in the 1990s. This shift in policy has happened at the same time as the growth in new technology has increased. The paper explores the process of change and its consequences for the future position of women within the European labour market. The change in ESF policy is seen as one more area in the gendering of new technology. The effect of such occupational gendering is the further segregation of the labour market. The unemployed women targeted by the ESF are denied access to the technological skills and knowledge which numerous EU Reports have predicated as increasingly necessary for future employment.

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The ESF and new technology training for unemployed women.

Introduction.

A research project into the policy aims of the European Social Fund (ESF) has highlighted some interesting developments concerning new technology training offered to unemployed women. It also points to the current occupational gendering of new technology.

The ESF's emphasis on new technology training increased throughout the 1980s and yet, in the 1990s disappears from policies towards 'socially excluded' groups, including long-term unemployed women. This shift in vocational policy has happened at the same time as the growth in new technology has increased, in both technological industries and in almost all other industries. This paper explores the process of change and its consequences for the future position of women within the European labour market.

Policy legislative and interpretative documents of the European Union, (EU), form the basis of the analysis. My specific focus is on Objective 3 of the ESF which was concerned, until this year, with the vocational training of long-term unemployed women aged over 25. This now includes women aged under 25.

In the first section of this paper I provide a background to the European Social Fund. The second section focuses on the processes and

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structures by which the labour market is hierarchically and occupationally gendered and segregated, including, specifically, the gendering of new technology.

The third section outlines the method of research and the collection of data. The fourth section examines ESF new technology training policy; the fifth, relevant European Reports, and the sixth, the relationship of the ESF policy to the European labour market. In the final section, the conclusion, I consider the implications of the ESF policy for unemployed women.

The European Social Fund.

After the second world war a combination of western devastation, immediate Soviet threat and fears of further nationalism, led to the economic need to rebuild Europe with the aid of the Marshall Plan (1947). Europe's economic well-being demanded the removal of national trade barriers, the construction of a large market able to compete with the USA and the Pacific-rim, and continued peace. The original six countries of the European Community signed the founding Treaty of Rome on the 25 March 1957. In 1993 the Single European Market was enacted, the Maastricht Treaty ratified, and the European Union, (EU) created.

Arguably, all apparently social and political reforms and legislation have been, and are, directly connected to the prime economic goal of

establishing a 'perfect market situation': of making the European Union a major economic force in the world.[1] The economic emphasis on the potential labour force is a main influence behind the EU's education, training and equal opportunities policies. There is then a direct connection between the economic base of the EU and its concern with vocational training.

The ESF is one of the EU's three Structural Funds which together form a major part of the strategy to improve the European economy. The ESF is rooted, through Article 123, in the Treaty of Rome, and it became operational in 1960. Its purpose was to support the vocational training and retraining of workers, and increasingly throughout the 1980s, that of the unemployed. It does this by funding training directly related to the needs of the labour market. By these means, the aim is to increase the employment chances of the 'trainees'. The ESF's policy is structured through a system of 'objectives' and 'priorities'. The *economic* base of the ESF is as important today as it was originally.

Although the vast majority of the ESF's funds are allocated to 'mainstream' funding through the structure of objectives and priorities, the ESF retains some funds to promote its own European-wide, inter-Member State, programmes. These are the *Initiatives*. One such Initiative is the *New Opportunities for Women* (NOW) programme. Although these, like Objective 3, are administered through individual Member State governments, they are less open to national

reinterpretation. My emphasis, in this paper, is on the ESF's objective 3 policy. [2]

Occupational gendering.

European Reports and statistics show the majority of employed women still located in traditionally gendered areas of the labour force, with low-status, low-pay, and little choice or opportunity for advancement. This position has remained constant throughout the history of the European Union. This is the gender segregation of the labour market.

Earnings are often used as a labour market segmentation indicator. A gendered analysis of EU earnings shows those of women consistently below those of men. In the UK they remain fairly steady at approximately 68% of men's, (Women of Europe 1989). Interestingly, pay differentials are found to be

> "widest at the extremes of the educational scale, that is, the cases of women with little or no schooling and those with high educational levels." (Women of Europe 1992 p53)

It is women at the bottom of the educational scale who are increasingly targeted by the ESF Objective 3 policies. This Report concludes that women are segregated into certain occupations and then further segregated by a hierarchical segregation which consistently, class for class and race for race, favours men. This segregation is reflected in the gendered pay differentials. Furthermore, women are far less likely

than men to be employed full-time, but are more likely to be in temporary or part-time employment: lower paid and less secure - in the EU's words, 'atypical', (Women of Europe 1992). This is of course 'atypical' to the 'typical employment structure, that of men.

The British sociologist Sylvia Walby is a major contributor to gendered labour market studies. In her early focus on the patriarchal structures operating within the labour market she identifies first, the predominance of women in part-time employment compared with male full-time employment; and second, occupational segregation, (Walby 1983). In her later work she continues her focus on occupational segregation, (Walby 1986, 1988). The four main points of her theory of gender segregation are: the sexual division of labour - both inside and outside of the family; the importance of historical analysis; the social struggle involved in the process of constructing a segmented labour force; and finally, the intersection of patriarchy and capitalism - the conflicts between them as well as their shared interests. She subsequently sees this fourth point as itself inadequate if it does not also take into equal account, the imperialistic, colonial aspects of capitalism, (Walby 1992). She sees this process of conflict and interest as present throughout the *continual* restructuring of the labour market - historically and spatially, (Walby 1986). She states:

> "Segregation is often the result of the struggle when patriarchal forces have been insufficiently strong to exclude women altogether ... These have often been

fought at the level of a particular occupation or industry, which is necessarily spatially located, at moments when there are changes in production. *That is, changes in the organization of capital often precipitate gender struggles over employment in particular occupations, since they both destabilize the old balance of gender forces and create and destroy particular forms of employment.*"
(Walby 1986 p88, emphasis is mine)

My concern in this paper is with just such a contemporary change to the organization of capital: the changes brought about by the production and use of new technology.

Cynthia Cockburn has also been concerned with developing interweaving gender and class analyses of the labour market. Her work has focused on the historical *processes* of class and gender construction, with a specific interest in the gender implications of new technology, and an exploration of the linkage between male physical power and technology, (Cockburn 1988, 1990).

The base of Cockburn's work, like that of Walby, is the identification of sex segregation within the labour force. The argument is that sex segregation is maintained through occupational and hierarchical segregation, and through the process of gendering. Cockburn considers the occupational and hierarchical segregation to be largely the result of the "manoeuvrings of men to evade the incursions of

women": the workplace being a site where two systems of power - class and sex - are worked out, (1988 p32). She argues that the process of gendering operates alongside, and informs, the segregation process. Occupational gendering is the means by which the gendered segmentation of the labour market is developed and maintained to the general benefit of men and the equal detriment of women. The construction of gender, Cockburn argues, is dualistic - femininity and masculinity complement each other and at the same time are mutually exclusive of each other: as people work, they construct a 'culture' around their work: hence the male culture of manual trades or the female culture of textile manufacturing. She concludes that the process of gendering is a "medium of male power", (Cockburn 1988 p37).

In her later work, Cockburn focuses particularly on the processes of material gendering that includes the economic, the socio-political, and the physical. She believes a "politics of physical power" is vital, because it is men who design the tools and machinery for their use - for their average physical size, weight and capabilities; this makes them easier for men to use and more difficult for women. This is then used by men as an indicator the skill involved, (Cockburn 1990).

The importance of this gendered hierarchical and occupational segregation is that women - relative to men of the same class, 'race' or educational ability - have been restricted to the 'low-skilled', low-paid,

periphery occupations, with little authority or control. A powerful component of this restriction is the definition and use of the concept of 'skill'. This concept of low-skilled work is itself a 'gendered' one. In an analysis of the gendering of skilled and unskilled work, Jane Gaskell (1987) concludes by stating:

> "'Skill' should not be seen as an independent variable, a fixed attribute of a job or a worker which will explain higher wages or unemployment. ... The 'skilled' label ... stands for a *political process in which some workers have more economic power than others*. It is this power that allows them both to make the skilled label stick, and to demand higher wages, limit entry into the job and increase the stability of their employment." (Gaskell 1987 p279, emphasis is mine)

Similarly, Linda McDowell (1989) points to a process whereby men's work is firstly 'de-skilled' and secondly - and only then - opened up to women.

Linked to this concept of gendering is that of *re*-gendering. This refers to the *continual* process of gendering which is related directly to changes within the processes of production and which maintains, class for class and race for race, the *gendered* power differential. For instance, changes in the organization of capital cause corresponding changes in occupational gendering. New technology is one such major change.

At one end of the continuum of gendered response is the strengthening of segregation which Cockburn (1990) identifies in her study of print compositors. At the other end of the continuum the response can be a complete reversal of the existing occupational gendering. Hartmann (1979) details two such responses to the technological impact of the British industrial revolution. Both cases: weavers and spinners, resulted in a complete re-gendering. From 'self-employed' skilled male weavers working in their own homes, industrialisation brought factory-based looms. The factory-owners no longer needed to pay the high wages previously commanded by the scarcity value of the male weavers. Women replaced the men as the weavers in the new factories. The gendered reversal of spinning happened the other way around. The women 'jenny'-spinners were replaced by men 'mule'-spinners. The new 'mule-spinner' was more technological than the 'jenny' and hence, spinning became a 'high-skilled' male occupation - subsequently closed to women. The technology of the industrial revolution changed the scarcity value of the labour required. In weaving, the scarcity value and the 'skill' decreased: weaving became a female occupation. In spinning, the scarcity value and the 'skill' increased: spinning because a male occupation. The changes being wrought by new technology are similar to those of the industrial revolution in their scope and depth of impact - both at work and in the home.

The process of gendering of new technology has been considered throughout the spectrum of its use. Mahony and Van Toen (1990), for instance, consider the masculinization of the academic study of computer science. Kanawaty (1985) points to the closure resulting from the general lack of training provision. McDowell (1989) considers both the processes of skilling and de-skilling and the ways by which technology serves the interests of some against the interests of others. Cockburn (1990) examines the way in which new technology has been used to raise production, whilst at the same time decreasing the need for human labour. She concludes:

> "Until we recognize what capital is taking away from some men as workers, we cannot predict the strategies by which they may seek to protect their positions as men. As one technology fails them will they seek to establish a power base in another? Will they eventually abandon the de-skilled manual work to women, recreating the job segregation that serves male dominance? Or will the intrinsic interdependency of keyboard and computer force a re-gendering of 'typing' so that it is no longer portrayed as female?" (Cockburn 1990 p99)

Kaplan (1992) points to two political aspects of new technology, which she argues are inherent within it. The first of these is the citing of technological change within 'society', not separate from it. The makers of technology are themselves influenced by their historical and social

context. Wajcman (1991) stresses that technology is not neutral, even though it is often presented as such. Cockburn, for instance, pointed to the male design of tools as a vital step in the gendering of the particular skill associated with it. Similarly, contributors to Green et al (1993) focus on the gendered design of new technology and its relationship to the gendering of specific technological skills. For instance, Pain et al (1993) emphasise the dominance of white male scientists involved in the design of new technology, and point to the power that results from that involvement. At the other end of the continuum from design to use, Liff (1993) points out that women office workers (often the end users of such technology) are rarely consulted by management in the process of change caused by new technological systems. And, as explored in this paper, and in Brine 1992, there is the role played by policy within the gendering process.

The second of Kaplan's political aspects recognises that "a given technical system actually requires the creation and maintenance of a particular set of social conditions as the operating environment", (p37). As the tools themselves are gendered, so are the sites where new technology is produced or operated. She points to the loss of democratic freedoms resulting from technological security structures, and to its general compatibility with highly structured centralised management controls.

It is clear from the literature that there are no processes or structures related to new technology that are gender free, it is the processes and structures together which gender new technology.

The research method.

The findings detailed in this paper represent part of a research project that followed the general principles of 'grounded theory', (Glaser & Strauss 1967). The research stage relevant to this paper was a secondary data based documentary analysis. I concentrated on the legislative and interpretative documents of the European Commission and its various departments and sub-bodies, and on EU Reports published throughout the period.

The first step in the use of secondary data is the identification and location of the relevant sources. Initial familiarization was based on a broad 'keyword' search of any guides, catalogues, indexes or databases that might be relevant. The keywords for European documentation were ESF, Objective 3, vocational training, women, equal opportunities and unemployment. Having located the relevant source documents, the second step was that of analysis. I was concerned with what was said in these documents, and the way in which it was said, and with locating those areas where women were marginalized in the texts, or completely absent.

The approach was three-pronged. The first, historical. When was this published, in what form, what exactly did it say, and in whose name does it say it? The second was the process of interpretation. What was the initial legislation, has it been modified, how has it been interpreted - by whom, when, and in what publication? The third, the relevant Reports. This entire approach relied on a fine textual analysis of the documents: the identification of single words omitted or inserted, or any particular emphasis or stress, during either the process of time or of interpretation. My concern with the ESF's policy of new technology training for long-term unemployed women emerged from this analysis.

Methodologically, the possibilities of secondary data outlined by Frankfort-Nachmias & Nachmias (1992) were highly applicable to this research. In particular it allowed access to a wide range of source material; it allowed me to undertake a historical analysis of change, and it allowed me to make comparisons between Member States. Furthermore, it is a low-cost method of research providing an extensive amount of data that could not have been obtained by any other means, and the same sources are just as easily available to other researchers.

ESF policy on new technology training.

It is possible to distinguish five distinct periods within the development of the ESF. These periods relate to the major legislative Reforms of the ESF. Along with legislation, there is also interpretation. One of the main sources of interpretation regarding the policy for women, has

been the *Equal Opportunities for Women Action Programmes*, (1982-5; 1986-90; 1991-6). These three programmes have exerted a strong interpretative influence, responding to and interweaving with the Commission's ESF policy Reforms.

The first period, following the Treaty of Rome, began with the enactment of the ESF in 1958 and ended with the 1971 Reform. The second period continues from 1971 to 1983. 'Women' were first specified as a targeted 'group' for training in the 1971 Reform, (European File 1979). This period includes the crucial 1977 Reforms which represent the first stage in the decentralisation of ESF administration, and the subsequent increase in importance of individual Member State governments, (Social Europe 1991; Background Report 1978).

The third period began with the Decision of 1983 that reinforced the 1977 Reform. This Decision recognised, for the first time, the importance of new technology training:

> "The Social Fund supports programmes specifically to help women aged over 25 to find new jobs, especially in the fields of computers, electronics and office work. It also helps women to find jobs in industries where they are traditionally under-represented, or more qualified jobs in industries where women are frequently employed."
> (European File 1984a p9)

At the same time, this Decision increased the importance of the Guidelines and Priority system, increasing the ability of the ESF to direct Member States vocational training programmes. Of considerable significance within this period was the *second action programme for equal opportunities for women*, (1986-90). This action programme recommended actions encouraging women towards "an equal level of participation in employment linked with new technology", (COM(85)801 p9). The ESF applications to be encouraged were only those that offered training towards:

> "jobs for women in occupations in which they are under-represented, (which often implies the use of new technologies)." (COM(85)801 p23)

This emphasis on 'occupations of under-representation' with only an adjunct to new technology influenced the funding applications of this period - many of which simply appended new technology to the main skill training area. In some cases this new technology training led to a low-level external qualification, but just as often led simply to an 'in-house' course completion certificate, or, in some cases, to no qualification at all, (Brine 1993 p356).

This secondary status of new technology training itself then influenced subsequent interpretations of policy. It was the primary reference to 'under-representation' which was consistently adopted, reinforced and developed through the ESF system of Guidelines and Priorities, whilst

that of 'new technology' became increasingly marginalised until eventually it dropped out of sight altogether.

This third period ended, and the fourth began with the major Structural Funds Reform of 1988. This Reform aimed to rationalize the three major Funds to construct a more integrated approach to European Funding strategies and processes. Through its use of Community Support Frameworks (CSF) this Reform continued the process of decentralisation, effectively devolving funding power (and hence influence on training provision), away from 'Brussels' and back to the individual Member State governments. (3) This Reform also restricted the eligibility of unemployed women to those experiencing *particular difficulties* on the labour market, that is, women with few qualifications or 'marketable' skills. In this CSF policy, agreed to by all Member States, there is no mention of 'new technology'.

Midway between the fourth and fifth periods the *second action programme on equal opportunities for women*, gives way to the *third action programme*, (1991-96), which similarly stresses the need for measures encouraging women towards occupations of under-representation, (COM(90)449). However, the *second action programme's* emphasis on new technology is now absent, or at least submerged beneath the broader concept of under-representation. New technology is not even mentioned in the *action programme's* sections on employment or the labour market.

This absence of new technology training within the *third action programme* happens despite the Commission's own Recommendation of November 1987, (Social Europe 1989b), and the findings of the Toledo Seminar of 1989, both of which stressed the need for training in the 'occupations of the future' such as new technology, (Social Europe 1989a). In its place this *third action programme* emphasises training for Local Employment Initiatives and for women setting-up their 'own enterprises' or co-operatives.

The specific focus of concern in the *third action programme* is on 'atypical' working patterns, 'quality' of work and sexual harassment. Neither the economic necessity for paid employment, nor any acknowledgement of class, race or disability differentials between women, nor to reiterate, any mention of new technology training, is evident in this *action programme* of which its very existence is to influence policy intention, interpretation and implementation. This is similar to the equally narrow concept of women's employment contained in the 1989 EC Report *Employment in Europe* (COM(89)399) which also concentrates on the 'atypical' - for instance, part-time work and homeworking. In this Commission Report's section on 'new technology' there is no mention at all of women - the language and the subject are consistently masculine.

The recommendations on specific aspects of training, as detailed in the earlier *second action programme*, have been replaced either by generalisations or by specific reference to 'atypical' working patterns. The *second action programme* had emphasised under-representation and new technology. New technology is now missing and this omission allows individual Member States the option of no longer providing such training to unemployed women. Furthermore, the supposedly non-gender specific general Reports on vocational training make progressively less mention of women, in some cases 'vaporizing' them away altogether in their continued reference to the male worker.

The *third action programme* overlaps into the current, fifth period of the ESF which came into effect with the 1994 applications and will run until 1999. This 1993 Reform represents another major shift in ESF policy. It now includes, under Objective 3, long-term unemployed women aged over 25 and unemployed women below 25. But what is more important, further refining the 1988 Reform's targeting of women with 'particular difficulties', this 1993 Reform emphasises the tighter targeting of Funds towards 'socially excluded' groups. This new concept represents a trend within ESF policy over the last few years, away from the rather simplistic notion that short vocational training courses can lead to tangible gains in employment, towards a far more complex model of the processes and consequences of long term unemployment. The concept of social exclusion recognises the processes, the structures and the situations in which "certain groups,

individuals or areas (are excluded) from ordinary social processes and rights," (COM(93)435 p8). Low educational attainment is recognised as a significant factor in the process of social exclusion.

European Reports on new technology.

Throughout the 1980s, at the same time as legislation and *action programme* interpretations were being made regarding new technology, there were numerous EU Reports stressing the *predicted* impact of new technology, its consequences for production and employment, and their recommendations for relevant vocational training. Typically, for instance:

> "There are virtually no sectors or occupations which information technology has not already affected - or will not affect in the future. Forecasts indicate that by the year 2000, two out of three jobs will be affected by information and communications technology. ...
> The types of skills and qualifications in demand are .. those with increasing requirements involving mental flexibility, responsibility and planning skills and basic understanding of new technologies." (COM(89)399 p134-5) [4]

Much reference is made throughout these Reports to women's occupational vulnerability. It was predicted that much routine production work carried out predominantly by women would be

replaced by technology. The Commission's *Official Journal* (OJC 1986), in 1986 stated it must:

> "... emphasise the danger that in particular computerization and automatization in the manufacture of goods, in offices and in trade may make women redundant or alter their jobs so that women with their present occupational qualifications *may lose their jobs and be affected to a greater extent by the negative consequences of new technology, without being able to reap the benefit thereof.*" (OJC 1986 p70; the emphasis is mine.)

The Report recommended 'specialist training' to enable working women to adapt to technology. It was forecast that traditional non-manual work of women such as typing and clerical work would be replaced by computers, word processing and electronic mail. More recently this key-board servicing of others is itself becoming redundant as those in 'higher/managerial' positions increasingly 'keyboard' their own work at their own personal computer - as I am, (EC 1988b). Examples of this latest impact on women's traditional office work are in practically every office within Britain, and one suspects most of the rest of Europe as well. Particular examples can be seen in the transactions involved in banking and finance, (EC 1984), for example the extent of computerization, electronic communication, information systems, and cash-points in the wall, all decreasing the industry's reliance on mainly, at this level, female labour. It is also clearly identifiable in the

processes involved in retail work - computerized stock control, and computerized check-out systems - and of course the linkage of the retail system with that of banking through electronic automatic debit, (EC 1985a).

On the basis of such predictions as these, the majority of these EU Reports stressed that women should be a highly prioritised group for new technology training. However, throughout the 1980s, certainly within the UK, this demand from the European Union for new technology training was commonly translated into tokenistic 'end-user' training appended to the main training. For example, the ESF's 16th Report (1988) noticed throughout the Union that:

> "New technologies are used as an educational support. In terms of skills, they are not systematically integrated in the training content ... and in any case it seldom goes beyond the initiation level." (COM(88)701 p57)

A later Report found that the main form of new technology training related simply to computer-aided office work, (EC 1985b). This Report describes women's experience of computer technology as being "only 'on the surface'", and refers to women being denied the chance to investigate the internal workings of a computer or to *experiment with other applications or software*. (EC 1985b p69; emphasis is mine.) Three years later a further Report points out that it is men who mostly benefit from training in new technology, (EC 1988a).

There are at least two basic levels on which new technology training can operate. The first focuses on understanding the 'mechanics' of computer technology, the electronics which make it work. The second relates to the potential of the software - how to write it and, of equal importance, how to engage with it and creatively use it. Not all the powerful new-technology-centred jobs held by men depend upon knowledge of the interior electronics of the system. The crucial difference in 'end-user' technology training seems to be between that of active creative engagement or passive manual key-boarding. This is as important an area of gendering as that of the more obvious area of electronic engineering itself.

So, to reiterate, the previous section showed that new technology training is no longer stressed in the EU Priority Guidelines; it is not mentioned at all in the *third action programme on equal opportunities for women*, nor is it mentioned in the 1988 Reform, the 1993 Reform, or the Community Support Framework. From the emphasis placed on it during the mid eighties, to this stage of relegation and omission is a significant change over a very short period of time. Significantly, this change has occured at the same time as numerous EU Reports have consistently stressed the importance of new technology, especially for vulnerable groups - which includes women. Is it then that these Reports are wrong? Is new technology no longer having any influence at all on the work-place? I think not.

The relationship of ESF policy to the EU labour market.

Marquand (1990) refers to the current rapid technological changes as being the latest 'Kondratiev wave' - a long cycle of economic activity developing from a technological change and creating a disjuncture between the technology and the social and political organisation of the society. It is this change which we are currently experiencing throughout the European Union. Such change in the economic structure of the western world is a huge change, evident not only in the processes of production but also in the movement and transations relating to capital. This change in the computerization of capital is evident in one's personal use of automatic cash-points and point-of-sale debit cards and in the electronic superfast shifting of vast amounts of capital from one end of the world to the other. It is the scope of this change on production and capital, and its ramifications for the future, which has made the European Union so aware of technological competition from Japan and the USA.[5] It is the same changes, their effects and their potential power, which make the current extent of technological occupational gendering so very important.

During the period 1981 to 1987 employment in software rose steeply; that of information technology, steadily, (COM(89)399 p133). Telecommunications, although shown to be decreasing over this period, is, in the early 1990s, through its linkage with information technology, now one of the main areas of projected growth.

New technology has changed the skills required of workers, including manual and low-grade clerical workers. The necessary skills have changed from "strength or dexterity" to an emphasis on "mental rather than physical abilities," (EC 1987b p39) Consequently, the demand upon workers to have formal qualifications and varification of competencies has increased. The effect of this is to compound the difficulties of employment for people with low educational skills. the chances of employment grow less for those without basic technological skills - except perhaps for those in the very lowest paid, totally non-technological, occupations such as general cleaning or street sweeping, or as Marquand (1990) points out, are deliberately designed for the technologically unskilled.

As well as affecting skills, the impact of new technology on many occupational areas is causing considerable re-shifting. Increasingly, there is less need for lower skilled workers, including those already trained in 'end-user' technology. This is an important development, for many of these workers are women - for instance, keyboard operators, electronic till operators. The polarising trend is towards higher level skills and away from lower-level skills - this trend even encroaching into the 'middle-level' as well, (EC 1987b). Kanawaty (1985) argues that this process of polarisation, through technology skills, is creating at one end a high-technologically skilled elite workforce much in demand, (the 'doers'), and at the other end, a far larger technologically illiterate group who will simply 'monitor' the equipment, (the 'watchers').

At the bottom of the labour market hierarchy are the routine workers - across many industries, in production, retail, servicing and offices, these are often - generally - women. These are the workers being displaced by new and even 'newer' technology, (EC 1987b).

The industries commonly referred to as 'new technology' represent the major growth area of the capitalist economy. Yet, despite this, there has been an international decline in the number of women professionally or technically involved in these industries. This has happened despite all the various government policies and legislation and other public-body initiatives concerned with 'equal opportunities'. The beneficiaries of new technology are men: the losers, women. Where women, especially working-class women, are engaged in work with new technology they are generally 'end-users' spending most of their working day kept "away from the power of the how and why and whether of the technology," (Mahony & Van Toen 1990 p322). Women in general are being excluded from the development and research of new technology's 'hardware' and 'software'. A similar exclusion operates regarding electronic engineering except where those female 'virtues' of 'dexterity' and 'patience' are ideal for the assembly line - and such 'virtues' are claimed more of oriental women than of western. This exclusion has happened despite the apparent 'feminine suitability' of electronic engineering.

(Insert Table 1 in here...)

Table 1 shows, in the UK, an absence of women in the higher level occupations of new technology. It also shows, with the possible exception of computer analysts and programmers, considerable hourly pay differentials in the other occupations. In all categories the weekly average is considerably higher for men, reflecting their greater access to bonus and overtime opportunities as well as a higher hourly rate.

Conclusion.

The European vocational training policies towards unemployed women are increasingly neglecting 'new technology'. Yet, simultaneously, the production industries of new technology, particularly information technology, biotechnology and telecommunications, are predicted to grow. Furthermore, the impact of new technology on numerous other industries and occupations is immense. New technology is causing a technological polarisation of the workforce - where even those with relevant skills, if low level, are at risk. Technological illiteracy reinforces the already established relationship between low educational attainment and unemployment. In the mid eighties, the ESF emphasis on new technology training for unemployed women was generally translated into appended training or low-level 'end user', poorly certified training. In the nineties, even this emphasis has been dropped.

Moreover, the ESF Objective 3 vocational training policy's neglect of new technology training has serious consequences for the future employment opportunities of unemployed women. Intentionally or not, the result is that it represents one more method by which new technology is being gendered male. 'New technology' is not simply one more particular occupation being closed to women - such as mining, or even bricklaying. It is an entire industry, with many aspects to its production, and crucially, it is integral to most other industries and occupations. Labour market studies have continuously stressed the importance of high-level technological literacy. They point out that even 'end-user' skills are increasingly under threat as more and more higher-skill users carry out their own basic keyboarding. But most importantly, it is the skill of the future. The change in the ESF prioritization of new technology training means that the targeted working-class women are having the occupational key to the future effectively denied them.

The European Reports, throughout the 1980s, identified women as a section of the population most at risk from new technology. At the same time the Reports also concerned themselves with the risk to the EU from the new technology based threat of Japan and the USA, (Social Europe 1992; Brine 1993). These Reports, already referenced in Note [5] repeatedly point out that the threat, although based in economics, *is also political and related to power.*

The importance of the interpretations and neglect of new technology training for women can be highlighted through the following analogy that is based on the similarity existing between these two sets of relationships in respect to new technology. The relationship of women to men can be seen as analogous to that of the EU towards Japan and the USA. Men, the Pacific-rim and the USA are the current beneficiaries of new technology; women and the EU, the potential losers. The concern here is not simply economic, but political and related to power: the technological power of the future is being gendered male. These high-value skills of new technology are growing ever more secure in male hands; these skills, as the references to Japan and the USA show, have the status and earning power for both the present and the future. To reiterate an important point, the impact of new technology is that it spreads out, having a greater and greater impact on other, supposedly more traditional non-technological occupations. Therefore to be denied these skills - and in particular the creative, flexible use of these skills, will close many other occupations to the un-technologically skilled as well as those occupations clearly linked with new technology.

Moreover, the process of gendering is directly related to time, the longer the period the more the entrenchment of gendering that takes place. As the power and the impact of new technology has become more apparent to more people, so the process of its gendering has increased. From my consideration of the Reports relating specifically

to new technology, from Reports predicting labour market trends, and from my own working experience, I have gained an impression of the speed and the spread of technological change. The current gendering not only closes the door to new technology and its effects right now, but to future access and use also. I have an image of a tunnel blocked off to women by a boulder at its entrance, whilst the men already inside burrow away into newer and newer technological knowledge and skill, throwing the debris haphazardly behind them, making it more and more difficult for women to follow them. As women we must understand the many processes by which this gendering takes place and ensure that we too acquire the technological skills and knowledge increasingly present in so many aspects of 'western' life now.

Notes.

1. This is evidenced in the following texts: EC 1975, EC 1976; Social Europe 1986a; EC 1987a; COM(90)516, EC 1992.

2. Brine (forthcoming) focuses on a broader comparison of objective 3 policy with that of the NOW programme.

3. Details concerning the Structural Funds Reform can be located in COM(87)376, COM(90)516; COM(90)334; OJC 1988.

4. The extent of the European concern regarding the future impact of new technology and the related need for training is evidenced through many EU texts, including, EC 1975, Social Europe 1986a, 1986b, 1990a, 1990b, 1985a, 1985b, 1992.

5. This is explicitly stated in the following: EC Background Report 1982,1987; European File 1980, 1984b.

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Table 1 UK: New technology occupations: average rates of pay: men and women: 1992.

Source Compiled from DE 1992 *New Earnings Survey, Tables 8 & 9* analysis of pay by occupation men and women on full time adult rates of pay

	Men average		Women average	
	hourly £	weekly £	hourly £	weekly £
Electrical engineers	13 35	527	**	
Electronic engineers	12 25	473	**	
Software engineers	12 56	476	**	
Engineers & technologists *	11 24	442	9 76	374
Electrical & electronic technicians	8 26	353	**	
Computer analysts & programmers	10 85	413	10 32	384
Computer operators, data processing operators, other office machine operators	8 04	318	5 47	206

** no such occupational listing appears in the Tables for women

* this is a general group heading for all engineers and technicians